

What is claimed is :

1. A power line connection structure for connecting a semiconductor integrated circuit (IC) to a functional macro, the structure comprising :

plural first power lines on a first level that provide a first voltage to the functional macro and plural second power lines on the first level that provide a second voltage, different than the first voltage, to the functional macro, said first and second power lines being parallel to each other ;

plural third power lines on a second level, different than the first level, that provide the first voltage to the IC and plural fourth power lines on the second level that provide the second voltage to the IC, said third and fourth power lines being parallel to each other, and also parallel to said first and second power lines ; and

plural power terminal patterns on a third level between the first and second levels, each of said plural power terminal patterns extending on the third level between a first area corresponding to an adjacent pair of said first and second power lines and a second area corresponding to an adjacent pair of said third and fourth lines so that each of said plural power terminal patterns transverses said first, second, third and fourth power lines,

a first set of said plural power terminal patterns being connected to said first and third power lines and second set of said plural power terminal patterns, which does not include any of said first set, being connected to said second and fourth power lines.

2. The structure of claim 1, wherein each of said plural power terminal patterns has the same shape and size.

5 3. The structure of claim 1, wherein said plural power terminal patterns comprise a repeating pattern of similar shapes that are spaced the same distance from each other.

10 4. The structure of claim 1, wherein each of said plural power terminal patterns is an island.

5. The structure of claim 4, wherein said island is a geometrical shape.

15 6. The structure of claim 1, wherein each of said plural power terminal patterns is a stripe that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

20 7. The structure of claim 1, wherein each of said plural power terminal patterns is a zigzag that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

8. The structure of claim 1, further comprising,
a first insulator that separate the first level from the third level

and a second insulator that separates the third level from the second level,
and

contact plugs that extend in respective ones of said first and
second insulators to connect said first power lines to said third power lines
5 and said second power lines to said fourth power lines.

9. A power line connection structure for connecting a
semiconductor integrated circuit (IC) to a functional macro, the structure
including :

10 plural first power lines on a first level that provide a first voltage
to the functional macro and plural second power lines on the first level that
provide a second voltage, different than the first voltage, to the functional
macro, said first and second power lines being parallel to each other ;

15 plural third power lines on a second level, different than the first
level, that provide the first voltage to the IC and plural fourth power lines
on the second level that provide the second voltage to the IC, said third and
fourth power lines being parallel to each other, and also parallel to said first
and second power lines ; and

20 plural power terminal patterns on a third level between the first
and second levels, each of said plural power terminal patterns having the
same shape and size, wherein a first set of said plural power terminal
patterns are connected to said first and third power lines and a second set of
said plural power terminal patterns, which does not include any of said first
set, are connected to said second and fourth power lines.

10. The structure of claim 9, wherein said plural power terminal patterns comprise a repeating pattern of shapes having the same shape and size that are spaced the same distance from each other.

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11. The structure of claim 9, wherein each of said plural power terminal patterns is an island.

12. The structure of claim 11, wherein said island is a geometrical shape.

13. The structure of claim 9, wherein each of said plural power terminal patterns is a stripe that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

14. The structure of claim 9, wherein each of said plural power terminal patterns is a zigzag that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

20 15. The structure of claim 9, further comprising,
a first insulator that separate the first level from the third level
and a second insulator that separates the third level from the second level,
and

contact plugs that extend in respective ones of said first and

second insulators to connect said first power lines to said third power lines and said second power lines to said fourth power lines.

16. A power line connection structure for connecting a semiconductor integrated circuit (IC) to a functional macro, the structure including :

plural first power lines on a first level that provide a first voltage to the functional macro and plural second power lines on the first level that provide a second voltage, different than the first voltage, to the functional macro, said first and second power lines being parallel to each other ;

plural third power lines on a second level, different than the first level, that provide the first voltage to the IC and plural fourth power lines on the second level that provide the second voltage to the IC, said third and fourth power lines being parallel to each other, and also parallel to said first and second power lines ;

plural power terminal patterns on a third level between the first and second levels, said plural power terminal patterns comprising a repeating pattern of similar shapes that are spaced at the same distance from each other, wherein a first set of said plural power terminal patterns are connected to said first and third power lines and a second set of said plural power terminal patterns, which does not include any of said first set, are connected to said second and fourth power lines.

17. The structure of claim 16, wherein each of said plural power

terminal patterns has the same size.

18. The structure of claim 16, wherein each of said plural power terminal patterns is an island.

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19. The structure of claim 18, wherein said island is a geometrical shape.

20. The structure of claim 16, wherein each of said plural power terminal patterns is a stripe that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

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21. The structure of claim 16, wherein each of said plural power terminal patterns is a zigzag that is transverse to the parallel alignments of both said first and second power lines and said third and fourth power lines.

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22. The structure of claim 16, further comprising,
a first insulator that separate the first level from the third level
and a second insulator that separates the third level from the second level,
and

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contact plugs that extend in respective ones of said first and second insulators to connect said first power lines to said third power lines and said second power lines to said fourth power lines.